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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,735	01/22/2004	John Anthony Hother	006924.P001	7678

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EXAMINER

PHAM, HOA Q

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 06/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<p><b>Application No.</b></p> <p align="center">10/763,735</p>	<p><b>Applicant(s)</b></p> <p align="center">HOTHER ET AL.</p>	
	<p><b>Examiner</b></p> <p align="center">Hoa Q. Pham</p>	<p><b>Art Unit</b></p> <p align="center">2877</p>	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28,30,32,33,36-44,49 and 50 is/are rejected.
- 7) ☒ Claim(s) 29,31,34,35,45-48 and 51 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| <p>1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br/> Paper No(s)/Mail Date <u>10/27/04</u>.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/> Paper No(s)/Mail Date. ____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: ____.</p> |
|--|---|

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

2. The drawings are objected to because the "Black Boxes" in figures 5-7 should be labeled. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the **"temperature control means"** in claims 9 and 36; the **"focusing means"** in claims 10-12; the **"fiducial marks"** in claims 14-15; the **"interchanged filters"** in claims 18-19 and 39; the **"filters"** in claim 21; the **"prisms"** in claim 22; the **"beam splitter"** in claim 24; the **"relay and focusing optics"** in claims 25, 40 and 43; the **"polarized filter"** in claim 26; the **"different amplifiers"** in claim 29; the **"remote control means"** in claim 31; the **"power control means"** in claim 32 and 46; must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

**With respect to the present invention, the terms "means" or "said" in the abstract should be avoided.**

6. The disclosure is objected to because of the following informalities: page 13, lines 5-6, the reference numerals "2" and "6" are not shown in figure 4. This is an example, applicant is required to correct all of the minor informalities such as typos, grammars, inconsistent use of terms (and/or numerals).

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. Claim 1 discloses "an in-vessel or down-hole imaging sensor"; however, the claim only recites a "single means" adapted to selectively emit and/or detect two or more independently controllable wavelengths or wavebands, which is incomplete because a "single means" as claimed does not provide enough structure for an "in-vessel or down-hole imaging sensor".

B. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. Claim 4 relates to "a method of obtaining images in a

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vessel”; however, only a “single step” is recited which is incomplete for the purpose of obtaining images in a vessel.

C. Claim 2 recites the limitation "the media" in line 2. There is insufficient antecedent basis for this limitation in the claim.

D. Claim 1, line 2 and claim 4, line 2; the phrase “and/or” is alternative.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2, 4-6, 8, 16, 21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakamura (JP-363167577A) (of record).

Regarding claims 1 and 4, Nakamura discloses an image sensing system (1) comprises means (22, 26, 27) adapted to selectively emit and detect two or more independently controllable wavelengths or bands (see abstract).

Regarding claim 2, see element (9) in figure 12.

Regarding claims 5 and 16, claim 5 is broadly read on figures 2 and 4; figures 2 and 4 disclose a sensor window (element 9 of figure 2), illuminating means (22) for emitting radiation; optical means (23,24) for directing the radiation through an area of the sensor window in a first direction; and optical means (26,27,31) for receiving

reflected from a target (40b) illuminated by radiation from the illuminating means through the area of sensor window in a second direction.

Regarding claim 6, see figure 3 of Nakamura.

Regarding claim 8, see abstract for the visual region video signal and infrared region video signal.

Regarding claims 21 and 23, see figure 1 of Nakamura for the different wavelengths at different pixels in an array detector.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 3, 7, 9-15, 17-20, 22, 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura in view of Dussan V. et al (6,075,611).

Regarding claim 3, Dussan V. et al teaches the use of a fluorescence detector (44) for determining the fluorescent light from the oil; it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a fluorescence detector taught by Dussan et al into the basic device of Nakamura for the purpose of detecting characteristics of oil in a well. The rationale for this modification would have arisen from the fact that the wavelengths and the detector could be changed according to the material to be measured.



Regarding claim 7, Dussan et al teaches the use of common optical fiber (50) for transmitting light and receiving light from the test object (figures 2 and 3). It would have been obvious to use a common optical fiber into the invention of Nakamura, thus reduce the cost of the device.

Regarding claim 9, it is well known in the art to use a temperature control system for controlling the temperature of the light source and the detector; it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Nakamura temperature controlling unit for controlling the temperature of the light source and detectors. The rationale for this modification would have arisen from the fact that the accuracy of the measurement is reduced when the light source and detector getting hotter.

Regarding claims 10-12, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a focusing lens having anti-reflecting coating in front of the detectors for the purpose of focusing light onto the surface of the detector. The rationale for this modification would have arisen from the fact that using such focusing lens would make sure all the reflected lights are received by the detectors.

Regarding claims 13-15, the fiducial marks are inherent in the display, especially display of an image pickup device.

Regarding claim 17, see column 6, line 32 of Dussan for the use of laser diode.

Regarding claims 18-19, it would have been obvious to one having ordinary skill in the art to include in Nakamura mechanically interchanged filters for selecting

appropriate wavebands because Nakamura teaches that different wavelength regions are observed simultaneously or selectively (see abstract).

Regarding claim 20, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the light source and filters by two different light sources having different wavelength regions because they are equivalent in function.

Regarding claim 22, Nakamura teaches that a plurality of different wavelength areas are selective or simultaneously received by the detector; thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a prism for diffraction grating which separates the wavelengths into different regions so that the detector can simultaneously receive.

Regarding claim 24, Dussan teaches the use of beam splitter (53)(see figure 2a).

Regarding claims 25, see claim 10-12 above.

Regarding claim 26, see filter (54) of figure 2 of Dussan V. et al.

13. Claims 27-28, 30, 32-33, 36-44, 49-50 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bigman et al (5,717,209) in view of Williams (3,807,226).

Regarding claims 27-28, 30, 38, 49-50 and 52, Bigman et al discloses a system for determining the properties of hydrocarbons in a fuel plant comprises light source for guiding light through fiber (102) at a specific waveband (800-1800 nm) and through a medium (122) to a target (124); detector means for detecting the radiation deflected by

the target through a fiber (100) (figures 6-8). Bigman et al does not explicitly teach an amplifier means such as a video amplifier for providing non-linear amplification of the detector means output; however, such a feature is known in the art as taught by Williams. Williams is a nonanalogous art; however, teaches the use of a non-linear amplifier for improving signal to noise contrast (see abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Bigman et al a non-linear amplifier taught by Williams so that the signal to noise contrast is improved.

Regarding claim 32, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Bigman et al a means for controlling the illumination of the light source because this is a known way to keep the intensity of the light source constant; thus, improve the accuracy of the measurement.

Regarding claim 33, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the light source (24) of Bigman et al by a laser diode because they are function in the same manner.

Regarding claim 36, it is well known in the art to use a temperature control system for controlling the temperature of the light source and the detector; it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in Bigman et al a temperature controlling unit for controlling the temperature of the light source and detectors. The rationale for this modification would have arisen from the fact that the accuracy of the measurement is reduced when the light source and detector getting hotter.

Regarding claim 37, see figures 5-7 of Bigman et al, the collimated light source after GRIN lens (106).

Regarding claim 39, see filter wheel (30) in figure 1 of Bigman et al.

Regarding claim 40, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include in front of the light source aspheric lens if a collimated light is desired.

Regarding claims 41-43, see elements (104, 106) in figures 6-7.

Regarding claim 44, see housing (130) in figure 7.

#### ***Allowable Subject Matter***


14. Claims 29, 31, 34-35, 45-48 and 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Barbour (5,652,617) discloses a side scan down hole video tool and Hother (6,472,660) discloses an imaging sensor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (571) 272-2426. The examiner can normally be reached on 7:30AM to 6 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Hoa Q. Pham  
Primary Examiner  
Art Unit 2877

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June 23, 2006